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IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

10 UNITED STATES OF AMERICA,
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12 Plaintiff,
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14 vs.
15 JAMES DEAN CLOUD,
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17 Defendant.

1:19-CR-02032-SMJ-1

United States Briefing
RE: Toolmark Evidence

16 Plaintiff, United States of America, by and through Vanessa R. Waldref,
17
18 United States Attorney for the Eastern District of Washington, Thomas J. Hanlon,
19 Assistant United States Attorney for the Eastern District of Washington, and Richard
20 C. Burson, Assistant United States Attorney for the Eastern District of Washington,
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22 hereby submits briefing pursuant to this Court's order (ECF No. 421).
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United States Briefing
RE: Toolmark Evidence

**I. FIREARM IDENTIFICATION/ TOOLMARK EVIDENCE IS
ADMISSIBLE AND WOULD BE HELPFUL TO A JURY**

Federal Rule of Evidence 702 governs the admissibility of expert testimony. It provides that:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (1) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.

Fed. R. Evid. 702. In its role as gatekeeper, the court "is not tasked with deciding whether the expert is right or wrong, just whether his [or her] testimony has substance such that it would be helpful to a jury." *Alaska Rent-A-Car, Inc., v. Avis Budget Grp., Inc.*, 738 F.3d 960, 969 (9th Cir. 2013)). To be qualified, the expert must have sufficient "knowledge, skill, experience, training, or education" to offer the opinion.

Fed. R. Evid. 702.

Therefore, a district court must determine if the proposed testimony would assist the trier of fact and if the witness is qualified to render the opinion. *Primiano v. Cook*, 598 F.3d 558, 563 (9th Cir. 2010). Under *Daubert*, a district court must "ensure that any and all [expert] testimony or evidence admitted is not only relevant, but reliable." *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 589 (1993).

1 **A. Firearm Identification/Toolmark Evidence Will Assist the Jury**

2 To be admitted, expert testimony must help the trier of fact to understand the
3 evidence or to determine a fact in issue. Fed. R. Evid. 702. “Evidence is relevant if:
4 (1) it has any tendency to make a fact more or less probable than it would be without
5 the evidence; and (2) the fact is of consequence in determining the action.” Fed. R.
6 Evid. 401. The evidence must logically advance a material aspect of the party’s case.
7 *Cooper v. Brown*, 510 F. 3d 870, 942 (9th Cir. 2007) (citing *Daubert II*, 43 F.3d at
8 1315). Regarding firearm/toolmark identification, it is widely accepted that expert
9 testimony can help the jury. *See, e.g., United States v. Scheffer*, 523 U.S. 303, 313
10 (1998) (contrasting the usefulness of testimony of a polygraph expert, essentially
11 testifying with an opinion about a witness’s truthfulness, to a jury with “other expert
12 witnesses who testify about factual matters outside jurors’ knowledge, such as the
13 analysis of fingerprints, *ballistics*, of DNA found at a crime scene . . .” (emphasis
14 added)).

15 **B. It is Undisputed That Forensic Examiner Van Arsdale is an Expert**

16 Pursuant to Rule 702, a witness may provide opinion testimony if first qualified
17 as an expert “by knowledge, skill, experience, training or education.” Fed. R. Evid.
18 702.

1. Mr. Van Arsdale's Qualification

Mr. Van Arsdale is qualified to testify as an expert in firearm and toolmark identification. Mr. Van Arsdale employs the theory of toolmark identification adopted by the AFTE, the leading international organization for firearms and toolmark examiners. Mr. Van Arsdale is currently a Forensic Examiner in the Federal Bureau of Investigation ("FBI") Firearms/Toolmarks Unit. *See ECF No. 220-4.* Mr. Van Arsdale has worked in the FBI laboratory for more than twenty years. *Id.* Mr. Van Arsdale was qualified as a firearms/toolmarks examiner after completing an extensive training program. *Transcript*¹ at 48. The FBI training program was three (3) years in length. *Id.* at 50. During that time period, Mr. Van Arsdale studied firearms/ammunition development, history, and manufacturing (including tours of manufacturers to understand the manufacturing process). *Id.* at 48-49. Mr. Van Arsdale studied tool development and manufacturing. *Id.* at 49. Mr. Van Arsdale completed microscopic examinations in the realm of firearms and toolmarks. *Id.* These examinations provided Mr. Van Arsdale with comparison microscope experience and allowed him to develop a threshold for identification. *Id.* Lastly, at the conclusion of his training, Mr. Van Arsdale successfully completed a written test

¹ Two transcripts were prepared in the instant case. The first transcript contains pages 1-233. The second transcript contains pages 234-396. Both transcripts were filed on October 21, 2021.

1 and a series of physical examination/competency tests. *Id.* All of Mr. Van Arsdale's
2 work was subject to peer review and administrative review. *Id.* at 50. Finally, Mr.
3 Van Arsdale regularly attends training conferences, participates in ongoing
4 proficiency testing, and has three publications. As such, Mr. Van Arsdale is qualified
5 by knowledge, skill, experience, training, and education to provide his expert
6 testimony regarding firearms and toolmark identification.
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8 **2. Defendant's Expert Testimony Regarding Mr. Van Arsdale's** 9 **Qualifications**

10 Mr. William A. Tobin ("Mr. Tobin") testified at the *Daubert* hearing. Mr. Tobin
11 prepared a slideshow presentation. *Defense Exhibit* 1005. Mr. Tobin testified as to
12 the term "technician." *Defense Exhibit* 1005, Slide 3. Mr. Tobin's slide show
13 defined "technician" as a person with minimal understanding of theory but working
14 mastery of technique. *Id.* Mr. Tobin testified that, in his view, "technicians" are
15 "bench experts." *Transcript* at 332. Mr. Tobin agreed that such technicians are
16 individuals who have "knowledge, skill, experience, and training." *Id.* Mr. Tobin
17 agreed that such a technician is "an expert in that technique." *Id.*
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21 Mr. Tobin simply does not believe in the science/technique of firearm/toolmark
22 examinations. This is despite the fact (discussed further below) that Mr. Tobin
23 employed the same science/technique (pattern matching) to track down a tool that was
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1 the source of a pattern embedded on nails used in a bomb. Nonetheless, it appears Mr.
2 Tobin would concede that Mr. Van Arsdale is expert in the technique.
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4 **II. Firearm/Toolmark Evidence Satisfies Requirements of Daubert**

5 *Daubert* identified several factors that often play a role in a Rule 702 inquiry,
6 but cautioned “[m]any factors will bear on the inquiry, and we do not presume to set
7 out a definite checklist or test.” *Daubert*, 509 U.S. at 593. The Daubert factors are:
8 (1) whether the particular theory can be and has been tested; (2) whether the theory
9 has been subjected to peer review and publication; (3) the known or potential rate of
10 error; (4) the existence and maintenance of standards controlling the technique’s
11 operation; and (5) whether the technique has achieved general acceptance in the
12 relevant scientific or expert community. *Id.* at 593-94. These factors are not
13 exhaustive and they “may or may not be pertinent in assessing reliability, depending
14 on the nature of the issue, the expert’s particular expertise, and the subject of his
15 testimony.” *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 150 (1999). Although
16 *Daubert* was limited to scientific evidence, the Supreme Court later clarified that the
17 gatekeeping function of courts described in *Daubert* applies not just to scientific
18 testimony, but to all expert testimony. *Id.* at 141. The court should ensure the expert
19 employs in the courtroom the same level of intellectual rigor that characterizes the
20 practice of an expert in the relevant field. *Id.* at 152. In exercising its gatekeeping
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1 function, a court must keep in mind the Supreme Court’s admonition that “vigorous
2 cross-examination, presentation of contrary evidence, and careful instruction on the
3 burden of proof are the traditional and appropriate means of attacking shaky but
4 admissible evidence. *Daubert*, 509 U.S. at 596.
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6 **III. Firearm Identification Satisfies the Requirements of *Daubert***

7 The Ninth Circuit and other courts have held that the field of firearm and
8 toolmark identification is a proper subject of expert testimony under both Fed. R.
9 Evid. 702 and *Daubert*. *See, e.g., United States v. Johnson*, 875 F.3d 1265, 1281 (9th
10 Cir. 2017) (affirming district court’s denial of defendant’s *Daubert* motion to exclude
11 ballistics testimony); *United States v. Brown*, 973 F.3d 667, 704 (7th Cir. 2020)(district
12 court did not abuse its discretion in determining that toolmark evidence was
13 admissible); *United States v. Gil*, 680 Fed. Appx. 11, 13-14 (2nd Cir. 2017)(affirming
14 court’s admitting expert ballistics testimony under *Daubert*); *United States v. Otero*,
15 557 Fed. Appx. 146, 169 (3rd Cir. 2014)(same); *United States v. Hicks*, 389 F.3d 514,
16 526 (5th Cir. 2004)(“[T]he matching of spent shell casings to the weapon that fired
17 them has been a recognized method of ballistics testing in this circuit for decades.”);
18 *United States v. Harris*, 502 F. Supp. 3d 28 (D.D.C. 2020); *Ricks v. Pauch*, 2020 WL
19 1491750 at *10 (“Indeed, the Court is not aware that any federal court that found
20 firearm and toolmark identification to be unreliable under *Daubert* and *Kumho Tire*.”);
21 *United States v. Romero-Lobato*, 379 F. Supp. 3d 1111, 1117 (D. Nev. 2019)(“no
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1 federal court (at least to the Court’s knowledge) has found the AFTE method to be
2 unreliable under *Daubert*.”)

3 The first Daubert factor asks whether the particular theory can be and has been
4 tested. The Association of Firearms and Toolmark Examiners (“AFTE”) is a
5 professional organization specifically for firearms and toolmark examiners.
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7 *Transcript* at 56. As noted in the initial briefing, courts across the country have
8 concluded that AFTE theory is regularly tested both on an individual level, by peer
9 review and verification, and on a larger level with numerous studies.
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11 When an examiner utilizes a comparison microscope, the standard is the AFTE
12 Theory of Identification. *Id.* at 76. An examiner is looking at a pattern (random
13 imperfections) produced by the firearm/manufacturer. The examiner is looking at the
14 pattern for a level of agreement that is based upon the examiners training and
15 experience. *Id.* at 76. The Theory defines “sufficient agreement” as looking at the
16 quantity and quality of the individual characteristics within a pattern, that the
17 likelihood of another tool making those marks from manufacturing or from use and
18 abuse would be considered so remote that it’s a practical impossibility. *Id.* at 79. Mr.
19 Van Arsdale testified that this is a subjective valuation founded on scientific principles
20 and supported by validation and empirical studies. *Id.* at 79.
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25 Mr. Tobin testified as to his view of the critical underlying premises used in
26 firearms and toolmarks identification. *Id.* at 217-218. The first premise is that if an
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1 examiner is going to opine on a specific source attribution, the implication is that there
2 is no other item on earth that could produce the same characteristic. *Id.* at 218. Mr.
3 Tobin testified that uniqueness and/or discernible uniqueness have never been proven
4 scientifically. *Id.* at 240; 241. Second, Mr. Tobin raised the question of whether a
5 human can observe discern uniqueness based on the instrumentation and skills
6 available today. *Id.* The third underlying premise deals with persistence, that is can a
7 bullet fired in a firearm today be matched to a firearm discovered at a later point in
8 time. *Id.* at 218-219. Mr. Tobin testified at length regarding the lack of scientific
9 support for such premises. Surprisingly, after testifying as to these supposedly
10 unscientific premises, Mr. Tobin testified that when he was employed by the FBI, he
11 was able to do what he testified cannot be done, that is identify a pattern on an object
12 and trace it to the manufacturing source – the tool that created the pattern. *Id.* at 326-
13 327. Mr. Tobin testified that he worked a case where a bomb killed a federal judge
14 and his wife. *Id.* at 326. Mr. Tobin inspected nails the bomber had used in the bomb.
15 *Id.* Mr. Tobin was tasked with inspecting the manufacturing patterns on the nails and
16 tracing such to the manufacturer. *Id.* at 326-327. Mr. Tobin traveled to Taiwan and
17 found the tool that created the patterns on the nails. *Id.* at 327.

18 Mr. Tobin also testified that firearm/toolmark identification is flawed because
19 “subjectivity allows for excessive bias. . .” *Id.* at 267. Mr. Tobin explained that “you
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1 cannot scientifically validate a subjective opinion.” *Id.* at 269. However, Mr. Tobin
2 later acknowledged that all forensic science has some level of subjectivity. *Id.* at 356.

3 Mr. Tobin explained that the only way to validate such subjective opinion is by
4 conducting black box studies. *Id.* at 269. The PCAST authors also stated that
5 additional black box studies were needed to establish foundational validity. In
6 response to PCAST, three black box studies (Kaiser, FBI/Ames, Smith) were
7 executed. The Kaiser and Smith studies confirmed an error rate of less than one
8 percent. *See Gov’t Exhibit #6, Slide 38; Transcript at 97.*

11 As such, the first Daubert factor - whether the particular theory can be and has
12 been tested - weighs in favor of admissibility.

14 The second *Daubert* factor asks if the theory has been subjected to peer review
15 and publication. First, every identification in the FBI laboratory also is verified as a
16 quality control measure. *Transcript* at 86. Second, the FBI laboratory has instituted a
17 blind verification process, which involves a full examination by a second examiner
18 and a supervisor. *Id.* at 86-87. Third, the AFTE Journal, “is dedicated to the sharing
19 of information, techniques, and procedures,” and the papers published within “are
20 reviewed for scientific validity, logical reasoning, and sound methodology.” *Romero-*
21 *Labato*, 379 F.3d Supp. 3d at 1119. Fourth, several other courts have commented on
22 the AFTE Journal and have found that it meets the *Daubert* peer review element. See
23 *Johnson*, 2019 WL 1130258 at *16 (AFTE toolmark methodology has been subject to
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1 peer review and publication and this *Daubert* factor weights in favor of admission);
2 *Ashburn*, 88 F. Supp. 3d at 245-46 (finding that the AFTE method has been subjected
3 to peer review through the AFTE Journal); *Otero*, 849 F. Supp. 2d at 433 (D.N.J.
4 2012)(describing the AFTE Journal's peer review process and finding that the
5 methodology has been subjected to peer review); *United States v. Taylor*, 663 F. Supp.
6 2d 1170, 1176 (D.N.M. 2009)(finding that the AFTE method has been subjected to
7 peer review through the AFTE Journal and two articles submitted by the government
8 in a peer-reviewed journal about the methodology); *United States v. Monteiro*, 407 F.
9 Supp. 2d 351, 366-67 (D. Mass. 2006)(describing the AFTE Journal's peer review
10 process and finding that it meets the *Daubert* peer review element.) Furthermore,
11 while the PCAST Report was sharply critical of the lack of "black box" studies
12 supporting the "foundational validity" of firearms identification expert witness
13 testimony, it never questioned the publication and peer review of firearms
14 identification studies in the AFTE Journal. Lastly, firearm/toolmark examiners work
15 has been peer reviewed through validation studies, empirical studies, and publication.
16 *Transcript* at 100.

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18 The second *Daubert* factor - whether the theory has been subjected to peer
19 review and publication - weights in favor of admissibility.

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21 The third *Daubert* factors asks about the known potential rate of error. When
22 looking at error rates, the question is "whether, in respect to a particular technique,
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1 there is a high known or potential rate of error.” *Kumho Tire*, 526 U.S. at 137. The
2 Supreme Court was justifiably concerned about a “high” rate of error, however, it did
3 not establish what constituted a “high” rate of error. The PCAST report notes a false
4 positive rate lower than 5% is the benchmark for reliability.²
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6 First, FBI firearm/toolmark technicians are required to complete a competency
7 test which is an accreditation requirement. *Transcript* at 98. Second, FBI
8 firearm/toolmark examiners are subjected to proficiency testing. *Id.* The FBI
9 outsources proficiency testing to eliminate in-house bias. The FBI utilizes
10 Collaborative Testing Services (“CTS”) for proficiency tests. *Id.* A study was
11 completed which reviewed error rates from 1978 to 1991. The study concluded that
12 during that time period, false positives were about 1%. *Id.* at 98. A second study
13 looked reviewed error rates from between 1992 to 2007. The study concluded that
14 found false positives for firearms to be 1.5%. *Id.* It should be noted that non-certified
15 examiners also take the test. *Id.* at 99. Presumably, the error rate would have been
16 less than 1% if only certified firearm/toolmark examiners completed the examinations.
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21 Mr. Tobin testified that such proficiency tests are “very easily defeated.” *Id.* at
22 380. Mr. Tobin believes this to be the case because such tests are closed set and an
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25 ² “To be considered reliable, the FPR (false positive rate) should certainly be less than
26 5 percent and it may be appropriate that it be considerably lower, depending on the
27 intended application.” (ECF No. 325-4, at 152).

1 unnamed laboratory director “in some state” made some sort of flippant remark
2 regarding such tests. *Id.* at 379. However, despite Mr. Tobin’s reservations, the
3 PCAST authors specifically recommended proficiency testing.
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5 Lastly, Mr. Van Arsdale testified concerning a number of recent validation
6 studies. *Id.* at 94-97. The validation studies confirmed that qualified examiners have
7 rarely made a false positive decision when comparing two toolmarks, and the theory
8 of identification has yet to be disproven. *Id.* at 99-100.
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10 Mr. Tobin testified that the validation studies are “seriously flawed.” *Id.* at 242.
11 Mr. Tobin explained that the studies were flawed because they were “closed set
12 sample space.” *Id.* Mr. Tobin explained that such are not like casework because “one
13 can use differences to eliminate.” *Id.* at 243. However, Mr. Tobin is not and has
14 never been a certified firearm/toolmarks examiner. *Id.* at 211. If a firearm/toolmarks
15 examiner received multiple cartridge cases, such examiner would likely compare the
16 cartridge cases. In casework (like the instant case), the examiner is not to receive a
17 single cartridge case, but rather multiple cartridge cases for comparison. Mr. Tobin’s
18 understanding of actual “casework” is flawed.
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22 Mr. Tobin also testified that the validation studies are flawed because they are
23 not blinded. *Id.* at 244. However, the authors of the PCAST report found the AMES
24 study (which was not blinded) to be “appropriately designed to test foundational
25 validity and estimate reliability.” *PCAST* at 111. Lastly, it should be pointed out that
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1 the quality assurance protocols implemented in actual casework at the FBI are not
2 present in validation studies. Such quality assurance protocols negate error.

3 Mr. Tobin and the defense suggest that the validation studies are essentially
4 invalid because of inconclusive responses. However, inconclusive responses are not
5 error. Mr. Tobin acknowledged that published academics have concluded that
6 framing inconclusive results as error is simply wrong. *Transcript* at 359. An
7 inconclusive decision exists when an examiner does not see a level of agreement
8 within the pattern to reach the conclusion of identification. *Id.* at 80. The examiner
9 simply does not have enough information. In any event, all of the validation studies
10 consistently established that when an examiner was able to view a pattern, image the
11 pattern, understand the level of agreement, and apply the AFTE theory, they were able
12 to make the proper conclusion nearly 99 percent of the time. *Id.* at 151.

13 The Fourth *Daubert* factor – rate of error - weights in favor of admissibility.

14 The fifth *Daubert* factor asks if the technique has achieved general acceptance
15 in the relevant scientific or expert community. First, multiple courts evaluating the
16 issue have found the AFTE has general acceptance within the relevant community.
17 *See, e.g., Romero-Lobato*, 379 F. Supp. 3d at 1122 (collecting cases); *Johnson*, 2019
18 WL 1130258, at *19, *McCluskey*, 2013 WL 12335325, at *8. Second, techniques do
19 not have to have universal acceptance before they are allowed to be presented before a
20 court. Lastly, firearm identification is accepted by practitioners, academia, and the
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1 industry. In regards to practitioners, firearms identification is accepted by AFTE,
2 American Academy of Forensic Sciences, the International Association for
3 Identification, and the European Network of Forensic Science Institutes. *Transcript* at
4 89. In regards to academia, more than 50 institutions have a degree in forensic
5 science which include some aspect of firearms and toolmarks. *Id.* at 89. Lastly, there
6 is an industry built around firearms and toolmarks and accrediting bodies. *Id.* at 90.
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9 Thus, the final *Daubert* factor - general acceptance in the relevant scientific or
10 expert community - weighs in favor of admission.

11 IV. CONCLUSION

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13 Consistent with FRE 702, Mr. Van Arsdale is qualified by knowledge, skill,
14 experience, training, and education and should be permitted to testify as to his
15 opinion. His expert knowledge will help the trier of fact to understand the evidence.
16 His testimony is based on sufficient facts and is the produce of reliable methods.
17 Furthermore, Mr. Van Arsdale has reliability applied the principles and methods to the
18 facts of the instant case.
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21 DATED: October 29, 2021

22 Vanessa R. Waldref
23 United States Attorney

24 s/ Thomas J. Hanlon
25 Thomas J. Hanlon
26 Assistant United States Attorney
27

s/ Richard Burson

Richard Burson

Assistant United States Attorney

I hereby certify that on October 29, 2021, I electronically filed the foregoing with the Clerk of the Court using the CM/ECF System which will send notification of such filing to the following: Lorinda Youngcourt, Esq.; John B. McEntire, IV, Esq.; Jeremy B. Sporn, Esq.

s/ Thomas J. Hanlon

Thomas J. Hanlon

Assistant United States Attorney